Coastal Hazards and Integration of Impacts on Local Adaptation Planning

Sørensen, Carlo Sass; Knudsen, Per; Andersen, Ole Baltazar

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Sørensen, Carlo; Knudsen, Per; Andersen, Ole Baltazar

DTU Space, Elektrovej 327, 2800 Kgs Lyngby, Denmark

E-Mail: pk@space.dtu.dk

Data on sea and groundwater levels, sea level, precipitation, land subsidence, geology, and geotechnical soil properties are combined with information on flood and erosion protection measures to analyze water-related impacts from climate change at an exposed coastal location. Future sea extremes will have a large impact but several coupled effects in the hydrological system need to be considered as well to provide for optimal protection and mitigation efforts. For instance, the investment and maintenance costs of securing functional water and wastewater pipes are significantly reduced by incorporating knowledge about climate change. The translation of regional sea level rise evidence and projections to concrete impact measures should take into account the potentially affected stakeholders who must collaborate on common and shared adaptation solutions. Here, knowledge integration across levels of governance and between research, private and public institutions, and the local communities provides: understanding of the immediate and potential future challenges; appreciation of different stakeholder motives, business agendas, legislative constraints etc., and a common focus on how to cost-efficiently adapt to and manage impacts of climate change. By construction of a common working platform that is updated with additional data and knowledge, e.g. from future regional models or extreme events, advances in sea level research can more readily be translated into concrete and local impact measures in a way that handles uncertainties in the future climate and urban development as well as suiting the varying stakeholder needs.

Keywords: coastal adaptation, sea level, integrated approach